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Korolenko

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[54] MULTIPLE-FREQUENCY SONAR SYSTEM

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[58] Field of Search 367/92, 103, 105, 367/119, 121, 188, 124, 126

[56] References Cited

U.S. PATENT DOCUMENTS

5,034,931 7/1991 Wells 367/126

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[57] ABSTRACT

A hull-mounted, multiple-frequency sonar system having a primary transducer, which provides transmission power for active modes and an added array of miniature hydrophones is provided. The multiple frequency sonar system includes vertical and horizontal arrays of miniature hydrophones connected by a multiplexer to four beamformer components. These beamformers process data received by acoustic intercept signals, passive signals, active fundamental frequency signals, and active second-harmonic frequency signals. Signal processing and display is available from each of the beamformers and an additional mode is provided wherein fundamental and second harmonic frequency data is combined and then displayed.

20 Claims, 4 Drawing Sheets

